Table 3
Calculation of R_0

Year	Total Revenue	SLC Revenue	R_0
(a)	(b)	(c)	(d) [(b)-(c)]
1985-86	$17,440,568	$2,484,658	$14,955,910
1986-87	$17,316,191	$3,646,949	$13,669,242
1988	$18,244,339	$4,563,679	$13,680,660
1989	$18,444,260	$5,703,289	$12,740,971
1990	$18,061,563	$5,926,881	$12,134,682
1991	$18,005,006	$6,062,676	$11,942,330
1992	$18,535,513	$6,230,468	$12,305,045
1993	$19,545,074	$6,491,729	$13,053,345
1994	$20,350,900	$6,964,408	$13,386,492
1995	$20,771,260	$7,266,852	$13,504,408

Notes:

1) All dollar figures are shown in thousands of dollars.
2) Total revenue includes both common line and traffic sensitive revenues.
3) Total revenue and SLC revenue data provided by the USTA.

Table 4
Calculation of R_1

Year	R_0[2]	SLC Revenue[3]	Cumulative Exogenous Changes[4]	ROR Changes[5]	CPE/IW Changes[6]	EA Changes[7]	R_1
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h) [(b)+(c)-(d)-(e)-(f)-(g)]
1985-86	$14,955,910	$2,484,658	($225,290)	$0	$0	$0	$17,665,859
1986-87	$13,669,242	$3,646,949	($666,106)	($191,916)	($1,209,828)	$134,187	$19,249,854
1988	$13,680,660	$4,563,679	($1,435,596)	($343,170)	($1,194,144)	$168,365	$21,048,884
1989	$12,740,971	$5,703,289	($1,546,158)	($352,194)	($1,336,698)	$151,894	$21,527,417
1990	$12,134,682	$5,926,881	($1,725,363)	($348,147)	($1,623,656)	$180,952	$21,577,778
1991	$11,942,330	$6,062,676	($2,275,759)	($712,608)	($2,114,251)	$163,413	$22,944,210
1992	$12,305,045	$6,230,468	($2,623,822)	($705,466)	($2,302,036)	$233,640	$23,933,197
1993	$13,053,345	$6,491,729	($2,342,223)	($717,861)	($2,510,045)	$32,561	$25,082,643
1994	$13,386,492	$6,964,408	($2,209,305)	($719,770)	($2,522,178)	($51,996)	$25,854,149
1995	$13,504,408	$7,266,852	($2,369,522)	($747,363)	($2,536,787)	($55,787)	$26,480,719

Notes:

1) All dollar figures are shown in thousands of dollars.
2) SLC Revenues data provided by the USTA.
3) R0 is total unadjusted common line and traffic sensitive revenue - SLC revenue.
4) Cumulative Exogenous Changes are the exogenous changes for both traffic sensitive and common line cumulated forward to 1995, and making adjustments for CPE/IW and Equal Access.
5) ROR Changes are the rate of return changes for both common line and traffic sensitive, adjusting them to the 1984 return of 12.75%.
6) CPE/IW changes are the difference between the CPE/IW revenue requirement change in that period and the CPE/IW revenue requirement change for the initial period.
7) EA changes are the difference between the EA revenue requirement change in that period and the EA revenue requirement for the initial period.

Table 5
Calculation of Stimulation Factor

Year	R_0	R_1	Stimulation Factor
(a)	(b)	(c)	(d)
1985-86	$14,955,910	$17,665,859	92.28%
1986-87	$13,669,242	$19,249,854	84.78%
1988	$13,680,660	$21,048,884	81.24%
1989	$12,740,971	$21,527,417	77.65%
1990	$12,134,682	$21,577,778	75.76%
1991	$11,942,330	$22,944,210	72.99%
1992	$12,305,045	$23,933,197	72.56%
1993	$13,053,345	$25,082,643	72.98%
1994	$13,386,492	$25,854,149	72.80%
1995	$13,504,408	$26,480,719	72.27%

Notes:

1) All dollar figures are shown in thousands of dollars.
2) Stimulated demand is calculated using R0 and R1 as outlined in Equation 1 of Appendix II.

Table 6
Adjustment of Common Line Minutes

Year	Common Line Minutes	Stimulation Factor	Adjusted Common Line Minutes
(a)	(b)	(c)	(d) [(b)*(c)]
1985-86	199,946,832	92.28%	184,517,383
1986-87	198,878,262	84.78%	168,610,623
1988	244,467,327	81.24%	198,600,902
1989	279,513,375	77.65%	217,045,685
1990	305,839,946	75.76%	231,708,600
1991	326,675,691	72.99%	238,428,628
1992	349,305,191	72.56%	253,439,646
1993	371,054,779	72.98%	270,799,026
1994	399,206,744	72.80%	290,629,840
1995	428,506,679	72.27%	309,685,967

Notes:

1) All minutes figures are shown in thousands of minutes.
2) Common line minutes provided by the USTA.

Table 7
Adjustment of Traffic Sensitive Minutes

Year	Traffic Sensitive Minutes	Stimulation Factor	Adjusted Traffic Sensitive Minutes
(a)	(b)	(c)	(d) [(b)*(c)]
1985-86	199,487,105	92.28%	184,093,133
1986-87	226,888,173	84.78%	192,357,655
1988	266,721,218	81.24%	216,679,567
1989	295,439,187	77.65%	229,412,280
1990	313,182,502	75.76%	237,271,422
1991	330,060,199	72.99%	240,898,857
1992	349,150,487	72.56%	253,327,400
1993	370,272,375	72.98%	270,228,021
1994	395,731,828	72.80%	288,100,037
1995	421,436,047	72.27%	304,575,952

Notes:

1) All minutes figures are shown in thousands of minutes.
2) Traffic sensitive minutes provided by the USTA.

APPENDIX III

to

AN UPDATE OF THE FCC SHORT-TERM PRODUCTIVITY STUDY

(1985-1995)

Analysis and Results Based on Data Received as of 2/22/97

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VII. APPENDIX III - BALANCED 50/50 PLAN

Since the F-U study uses the Commission's balanced 50/50 plan to calculate X, a brief description of the plan is appropriate. The Commission's balanced 50/50 Plan is an attempt to divide the benefits of average growth in usage per line between IXCs and LECs through the price cap index.

Let C equal the base period cost per line, M equal the base period carrier common line (CCL) minutes per line, g equal the annual growth rate of CCL minutes per line and X equal the productivity offset. The base period common line (CL) cost per minute is:

$$(1) \qquad \frac{CL_T}{M_T}$$

Since costs per line change by "GNP-PI - X" minutes", minutes change by g, and we are splitting the benefits of demand growth between local exchange carriers and their customers, the common line cost per minute in the following period is given by:

$$(2) \qquad CL_{T+1} = \frac{[C_T(1 + GNPPI - X)]}{\left[M_T\left(1 + \left(\frac{g}{2}\right)\right)\right]}$$

The percent change in the CL cost per minute is thus given by:

$$(3) \qquad \frac{(CL_{T+1} - CL_T)}{CL_T} = \frac{\left(GNPPI - X - \left(\frac{g}{2}\right)\right)}{\left(1 + \left(\frac{g}{2}\right)\right)}$$

APPENDIX IV

to

AN UPDATE OF THE FCC SHORT-TERM PRODUCTIVITY STUDY

(1985-1995)

Analysis and Results Based on Data Received as of 2/22/97

nera
Consulting Economists

Table 1
Productivity Offsets

	1985 -1995 Period
Unitary X	3.42%
G=	5.58%
Inflation=	3.67%
% SLC =	63.00%

Notes:

1) The productivity offsets shown here were calculated using the Balanced 50/50 formula.
2) G is the growth in common line minutes of use per line over the analysis period.
3) Inflation is calculated by an average of the change in GDP-PI (or GNP-PI) for the annual period ending six months before the filing date.
4) % SLC is the percentage of SLC to common line revenue in 1995.

Table 2
Switched Access Revenue Data

Year	Common Line		Traffic Sensitive	
	Unadjusted Revenue	Adjusted Revenue	Unadjusted Revenue	Adjusted Revenue
(a)	(b)	(c)	(d)	(e)
1985-86	$10,878,568	$7,670,412	$6,562,000	$3,922,486
1986-87	$10,213,735	$8,606,233	$7,102,456	$4,120,806
1988	$10,012,595	$8,758,339	$8,231,744	$4,892,311
1989	$9,807,040	$9,149,964	$8,637,220	$5,240,825
1990	$9,568,617	$9,340,582	$8,492,946	$5,212,965
1991	$9,395,161	$9,958,437	$8,609,845	$5,393,649
1992	$9,481,498	$10,452,158	$9,054,015	$5,302,034
1993	$10,407,842	$11,084,646	$9,137,232	$5,407,823
1994	$11,294,192	$11,661,432	$9,056,708	$5,318,903
1995	$11,535,097	$12,332,341	$9,236,163	$5,152,999

Notes:

1) All dollar figures are shown in thousands of dollars.
2) Unadjusted revenue data provided by the USTA.
3) Common Line Revenue is adjusted for rate of return, exogenous costs, inside wire and customer premises equipment.
4) Traffic Sensitive Revenue is adjusted for rate of return, exogenous costs, and equal access.

Table 3
Switched Access Exogenous Cost Changes

Year	Exogenous Cost Changes	
	Common Line	Traffic Sensitive
(a)	(b)	(c)
1985-86	$11,989	($193,799)
1986-87	($84,844)	($239,915)
1988	($585,494)	($68,747)
1989	($110,130)	($210,351)
1990	($25,183)	($136,174)
1991	($205,092)	($290,651)
1992	($136,608)	($189,206)
1993	$638,621	($323,154)
1994	$605,072	($465,567)
1995	($96,168)	($63,994)

Notes:

1) All dollar figures are shown in thousands of dollars.
2) Exogenous Cost data provided by the USTA.

Table 4
Switched Access Demand Data

Year	Common Line	Traffic Sensitive	WATS DA
(a)	(b)	(c)	(d)
1985-86	199,946,832	199,487,105	24,541,446
1986-87	198,878,262	226,888,173	28,515,202
1988	244,467,327	266,721,218	22,566,955
1989	279,513,375	295,439,187	16,732,120
1990	305,839,946	313,182,502	9,160,063
1991	326,675,691	330,060,199	5,693,207
1992	349,305,191	349,150,487	3,507,839
1993	371,054,779	370,272,375	2,634,953
1994	399,206,744	395,731,828	2,842,699
1995	428,506,679	421,436,047	1,853,391

Notes:

1) All minutes figures are shown in thousands of minutes.
2) Common line, traffic sensitive and WATS DA minutes provided by the USTA.

Table 5
Common Line Minutes

Year	Common Line Minutes	WATS DA Minutes	Carrier Common Line Minutes	Adjusted Carrier Common Line Minutes
(a)	(b)	(c)	(e) [(b)-(c)]	(d)
1985-86	199,946,832	24,541,446	175,405,386	159,975,937
1986-87	198,878,262	0	198,878,262	168,610,623
1988	244,467,327	0	244,467,327	198,600,902
1989	279,513,375	0	279,513,375	217,045,685
1990	305,839,946	0	305,839,946	231,708,600
1991	326,675,691	0	326,675,691	238,428,628
1992	349,305,191	0	349,305,191	253,439,646
1993	371,054,779	0	371,054,779	270,799,026
1994	399,206,744	0	399,206,744	290,629,840
1995	428,506,679	0	428,506,679	309,685,967

Notes:

1) All minutes figures are shown in thousands of minutes.
2) Adjusted Carrier Common Line Minutes are adjusted for stimulation.
3) Common Line minutes and WATS DA minutes are provided by the USTA.

Table 6
Traffic Sensitive Minutes

Year	Unadjusted	Adjusted
(a)	(b)	(c)
1985-86	199,487,105	184,093,133
1986-87	226,888,173	192,357,655
1988	266,721,218	216,679,567
1989	295,439,187	229,412,280
1990	313,182,502	237,271,422
1991	330,060,199	240,898,857
1992	349,150,487	253,327,400
1993	370,272,375	270,228,021
1994	395,731,828	288,100,037
1995	421,436,047	304,575,952

Notes:

1) All minutes figures are shown in thousands of minutes.
2) Adjusted minutes are adjusted for stimulation.
3) Unadjusted minutes are from data provided by the USTA.

Table 7
Summary of Adjusted Revenue Per Minute

Year	Adjusted Carrier Common Line Revenue Per Minute	Adjusted Traffic Sensitive Revenue Per Minute
(a)	(b)	(c)
1985-86	$0.04795	$0.02131
1986-87	$0.05104	$0.02142
1988	$0.04410	$0.02258
1989	$0.04216	$0.02284
1990	$0.04031	$0.02197
1991	$0.04177	$0.02239
1992	$0.04124	$0.02093
1993	$0.04093	$0.02001
1994	$0.04012	$0.01846
1995	$0.03982	$0.01692